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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,978

09/05/2006

Kaneo Chiba

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9335

36716

7590

04/11/2011

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EXAMINER

CHOI, FRANK I

ART UNIT

PAPER NUMBER

1616

MAIL DATE

DELIVERY MODE

04/11/2011

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/591,978	Applicant(s) CHIBA ET AL.	
	Examiner FRANK CHOI	Art Unit 1616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5 and 7-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-5 and 7-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3-5, 7-12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 1, 3-5, 7-12 have been amended to indicate that the ozone concentration in the water has 1.0 mg/L or more in six months as the original ozone concentration has been about 1.5 mg/L. The Applicant cites to the Example as support for the claim amendment. However, said example on page 15 of the Specification does not disclose a range of 1.0 mg/L or more or an approximate amount of 1.5 mg/L. As such, there is no support for said range or approximate amount. Claim 5 has been amended to indicate that negatively and positively charged electrolyte ions are electrostatically attracted to ions of H⁺ and OH⁻. The Applicant cites to Page 11, line 7 to Page 12, line 2 of the Specification as support for the claim amendment. However, said disclosure indicates that negatively charged electrolyte ions are attracted to H⁺ whereas positively charged electrolyte ions are attracted to OH⁻. The amendment does not make this distinction and, as such, is not supported by the Specification. Claim 7 has been amended to

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indicate that the concentrated ions due to the rapid shrinkage reduce the solubility of gas molecules to the aqueous solution by the effect of salting-out. The Applicant cites to page 10, line 18 to page 12, line 2 of the Specification as support for the claim amendment. However, said disclosure indicates that concentration of the ions occurs as the result of rapid bubble shrinkage where the shrink rate is too fast for the ions surrounding each bubble to disperse into the water which concentrated ions form an inorganic shell around the bubble thereby inhibiting the ozone bubble from spontaneously dissolving into the aqueous solution. Further, there is no disclosure which indicates that the result is due to the effect of salting-out. As such, the amendment is not supported by the Specification.

Claims 1, 3-5, 7-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention as follows:

Claims 1, 3-5, 7-12 indicate that the concentration of ozone after storage can be 1.0 mg/L or more. This renders the claims indefinite as the concentration range encompasses amounts which exceed the starting amount of "about 1.5 mg/L" before storage.

Claim 5 has been amended to indicate that negatively and positively charged electrolyte ions are electrostatically attracted to ions of H^+ and OH^- . This renders the claim indefinite as it is uncertain how a positively charged ion can be attracted to H^+ and how a negatively charged ion can be attracted to OH^- .

Claim 1 recites that the inorganic shell consists predominantly of electrolytic ions of iron or the like. However, in view of the amendment to claim 5 indicating that the shell can include H^+ and OH^- ions, it is unclear what the scope of "the like" includes.

Claim 4 recites the limitation "200 nm or less". There is insufficient antecedent basis for this limitation in the claim as the bubble size in claim 3 on which claim 4 is dependent is limited to a mean diameter of 140 nm (standard deviation of about nm).

Claim 7 recites the limitation "these concentrated ions". There is insufficient antecedent basis for this limitation in the claim as there is no previous limitation in the body of the claim or in claim 3 on which claim 7 is dependent that the ions are concentrated.

Claims 1, 3-5, 7-12 are rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. Evidence that claims 1, 3-5, 7-12 fail(s) to correspond in scope with that which applicant(s) regard as the invention can be found in the reply filed 1/31/2011. In that paper, applicant has stated that the charged surface of the microbubble attracts the counter ions including the electrolyte ions such as Na⁺ and Mn²⁺ which are superoxidized by the ozone and contribute to the stability of the interior ozone of the shrinking microbubble (Remarks (1/31/2011), page 6), and this statement indicates that the invention is different from what is defined in the claim(s) because none of the claims require the presence of Na⁺ or Mn²⁺.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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A facsimile center has been established in Technology Center 1600. The hours of operation are Monday through Friday, 8:45 AM to 4:45 PM. The telecopier number for accessing the facsimile machine is 571-273-8300.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Frank Choi whose telephone number is (571)272-0610. The Examiner maintains a flexible schedule, however, the Examiner may generally be reached Monday, Tuesday, Wednesday and Thursday, 6:00 am – 4:30 pm (EST).

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's Supervisor, Johann R. Richter, can be reached at (571)272-0646. Additionally, Technology Center 1600's Receptionist and Customer Service can be reached at (571) 272-1600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Frank Choi
Patent Examiner
Technology Center 1600
April 8, 2011

/Johann R. Richter/
Supervisory Patent Examiner, Art Unit 1616